

AMENDMENTS TO CLAIMS

1-23 (Canceled)

24. (New) A drive circuit for a high input resistance transistor device, comprising:

a photoelectric conversion device connected to a gate of a high input resistance transistor device, wherein the photoelectric conversion device is arranged to generate a positive drive voltage for supply to the gate upon receiving light energy from an ambient light source or an electrically driven light emission device;

a slave negative voltage supply device connected between the gate and source of the high input resistance transistor device, wherein the slave negative voltage supply device stores a portion of the positive drive voltage and, upon cut-off of the positive drive voltage, supplies a negative voltage to the gate of the high input resistance transistor in order to improve cut-off characteristics of the high input resistance transistor.

25. (New) A drive circuit for a high input resistance transistor device as claimed in claim 24, wherein said high input resistance transistor device includes a MOSFET.

26. (New) A drive circuit for a high input resistance transistor device as claimed in claim 24, wherein said high input resistance transistor device includes an IGBT.

27. (New) A drive circuit for a high input resistance transistor device as claimed in claim 24, wherein said high input resistance transistor device is a transistor module.

28. (New) A drive circuit for a high input resistance transistor device as claimed in claim 24, wherein said slave negative voltage supply device includes an inductor connected in parallel between the photoelectric conversion device and the high input resistance transistor device.

29. (New) A drive circuit for a high input resistance transistor device as claimed in claim 28, wherein said slave negative voltage supply device further includes a capacitor connected in parallel between ends of the inductor.

30. (New) A drive circuit for a high input resistance transistor device as claimed in claim 24, wherein said slave negative voltage supply device includes an inductor connected in series between the photoelectric conversion device and the gate of the high input resistance transistor, said inductor having a polarity opposite to a drive current direction.

31. (New) A drive circuit for a high input resistance transistor device as claimed in claim 30, wherein said slave negative voltage supply device further includes a resistor connected in parallel between the photoelectric conversion device and the high input resistance transistor device.

32. (New) A drive circuit for a high input resistance transistor device as claimed in claim 30, wherein said slave negative voltage supply device includes a capacitor connected in parallel between ends of the inductor.

33. (New) A drive circuit for a high input resistance transistor device as claimed in claim 33, wherein said slave negative voltage supply device includes a resistor connected in parallel between the photoelectric conversion device and the high input resistance transistor device.

34. (New) A drive circuit for a high input resistance transistor device as claimed in claim 24, wherein said slave negative voltage supply device includes a secondary battery system connected in series between the photoelectric conversion device and a source of the high input transistor device, and a resistance connected in parallel with either side of the secondary battery system.

35. (New) A drive circuit for a high input resistance transistor device as claimed in claim 34, wherein said secondary battery system comprises a capacitor or rechargeable secondary battery connected in parallel with a second resistance.

36. (New) A drive circuit for a high input resistance transistor device as claimed in claim 24, wherein said slave negative voltage supply device includes a secondary battery system and zener diode connected in parallel between the photoelectric conversion device and the high input resistance transistor device.

37. (New) A drive circuit for a high input resistance transistor device as claimed in claim 36, wherein said secondary battery system comprises a capacitor or rechargeable secondary battery and resistances connected in parallel with both ends of the zener diode and photoelectric conversion device.

38. (New) A drive circuit for a high input resistance transistor device as claimed in claim 24, wherein said slave negative voltage supply device includes a parallel-connected pressure effect device having a pre-stressed structure.

39. (New) A drive circuit for a high input resistance transistor device as claimed in claim 24, wherein the photoelectric conversion device is inverse series-connected with a polarity opposite to that of the positive drive voltage, and further comprising a secondary electricity storage device connected in parallel between both ends of the photoelectric conversion device.

40. (New) A drive circuit for a high input resistance transistor device as claimed in claim 39, wherein said secondary battery system comprises a capacitor or rechargeable secondary battery and a resistance connected in parallel between the photoelectric conversion device and the capacitor or rechargeable secondary battery.

41. (New) A drive circuit for a high input resistance transistor device as claimed in claim 24, wherein said slave negative voltage supply device includes a secondary battery system and zener diode connected in series between the photoelectric conversion device and the high input resistance transistor device.

42. (New) A drive circuit for a high input resistance transistor device as claimed in claim 41, wherein said secondary battery system comprises a capacitor or rechargeable secondary battery and a resistance connected in series with the secondary battery system and zener diode, and in parallel with the photoelectric conversion device.

43. (New) A drive circuit for a high input resistance transistor device as claimed in claim 24, further comprising a second inverse polarity photoelectric conversion device connected in series with the first photoelectric conversion device, and wherein said slave negative voltage supply device includes a secondary electricity storage device connected between ends of the second inverse polarity photoelectric conversion device for storing a negative voltage generated by the second inverse polarity photoelectric conversion device upon receipt of light energy from the light emission device.

44. (New) A drive circuit for a high input resistance transistor device as claimed in claim 43, further comprising a resistor connected in parallel between said second inverse polarity photoelectric conversion device and the secondary electricity storage device.

45. (New) A drive circuit for a high input resistance transistor device as claimed in claim 43, further comprising a zener diode connected in parallel between said second inverse polarity photoelectric conversion device and the secondary electricity storage device.

46. (New) A drive circuit for a high input resistance transistor device, comprising:

- a first light emission device;

- a first photoelectric conversion device connected to a gate of a high input resistance transistor device, wherein the first photoelectric conversion device is arranged to generate a positive drive voltage for supply to the gate upon receiving light energy from the first light emission device;

- a second inverse polarity photoelectric conversion device connected between a gate and source of the high input resistance transistor device, wherein the second photoelectric conversion

device is arranged to generate a negative drive voltage for supply to the high input resistance transistor device upon cut-off of the positive drive voltage in order to improve cut-off characteristics of the high input resistance transistor device.

47. (New) A drive circuit for a high input resistance transistor device, further comprising a secondary electricity storage device connected in parallel with the second inverse polarity photoelectric conversion device or storing said negative drive voltage.

a slave negative voltage supply device connected between the gate and source of the high input resistance transistor device, wherein the slave negative voltage supply device stores a portion of the positive drive voltage and, upon cut-off of the positive drive voltage, supplies a negative voltage to the gate of the high input resistance transistor in order to improve cut-off characteristics of the high input resistance transistor.